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## ORIGINAL ARTICLES

### ENDARTERITIS OBLITERANS: ETIOLOGY, SYMPTOMATOLOGY AND SURGICAL TREATMENT.*

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The term "Endarteritis Obliterans" was first used by Von Winuvarter when, in 1879, he reported a case of obliteration of practically all the arteries of the leg, due to a chronic process, which the pathologic findings showed had resulted from a proliferation of the cellular and fibrous tissue elements in the intima of the artery.

ETIOLOGY AND PATHOLOGY.

The conditions studied by Von Winuvarter has since been frequently observed and described, but its exact etiology has always been somewhat in doubt. Most observers have attributed it to syphilis and considered that it was likely to be found in patients with a history of the excessive use of alcohol and tobacco. In discussions of erythromelalgia and of Raynaud's disease the phenomenon has been frequently included, either as an accompanying pathologic condition, or as a causative factor.

As eminent a surgeon as Charles F. Painter, writing under the title of *Obliterating Endarteritis* in 1908, discussed his subject under five heads: (1) Erythromelalgia; (2) Angina cruris or intermittent limping; (3) Raynaud's disease; (4) Mowan's disease, and (5) Arteriosclerosis, senile gangrene and syphilis. All five groups have, he pointed out, certain characteristics in common. "At different periods of life, and in a totally different manner, the peripheral circulation of the extremities may be either continuously or intermittently interfered with to such a degree as to cause symptoms varying all the way from a slight blanching or blushing of the toes or the fingers, accompanied by subjective sensations of heat or cold, to a condition of gangrene in which the phalanges, one after another, fall off. The cause of the symptoms which are presented by patients suffering from this variously named condition is doubtless not one common to them all, but seems beyond reasonable doubt to be at least intermittently related to each of them. The one feature which they seem to possess in common is the evidence of a narrowing of the lumen of the peripheral vessels."

But at almost the same time in which Painter wrote, Leo Buerger presented to the Association of American Physicians, an exhaustive "Study of the Vascular Lesions Leading to Presenile Spontaneous Gangrene," which he announced were due to "a thrombotic process in the arteries and veins followed by organization and canalization, and not to be obliterating endarteritis." At the same meeting Bernard Sachs drew attention of the Association of intermittent claudication (angina cruris) with symptoms of the Raynaud type, recalling that a number of years earlier he had stated that "Intermittent claudication may be contrasted with erythromelalgia (motor paralytic symptoms with sensory and vasomotor disturbances, both due to peripheral nerve disease following upon obliteration endarteritis)", adding that "If Dr. Buerger's views are correct, we shall have to substitute "thromboangitis" for "obliteration endarteritis."

Much has been said since and written concerning the thromboangitis of Buerger, frequently termed *Buerger's Disease*, and although the particular syndrone to which the name has been applied is really a special manifestation of endarteritis, the nomenclature is not exactly applied, as is evident from a remark made by Frauenthal at his clinic in the New York Hospital for Deformities and Joint Diseases, who said, not long ago, that he had for many years paid especial attention to "obliteration endarteritis," or as Buerger calls it, "thrombo-angitis obliterans."

A consideration of endarteritis obliterans, then, must include Buerger's disease, as well as those cases of erythromelalgia and Raynaud's

*Read before the fiftieth annual meeting of the Florida Medical Association held at Jacksonville, May 15, 16, 1923.

disease, which progresses to the gangrenous stage, thus indicating that collapse and closure of the smaller arterial branches has taken place.

It is remarked by Max Strunskt that "endarteritis obliterans is conspicuous by the frequency with which it is overlooked in the routine examination of the arteries in every case of 'foot troubles,' especially in the male—make possible the early detection of the condition," though it is the observation of this author that "a disturbance in the pulses of the foot is not at all a sign of an early stage of the disease as was formerly supposed, but rather a sign of a late stage. By the time the physical change in the artery can be detected, the disease has already made terrific inroads.

"In order to cause the cessation or even the disturbance of a pulse, the pathologic condition must be gross and the disease must have advanced to the point at which there is occlusion either of the entire lumen or at least of the major part of the lumen of the artery; for endarteritis obliterans means not a thrombus formed suddenly but rather a gradual proliferation of the endothelial coat. The disease not only manifests itself by a local lesion in the arteries and veins, but also has a central lesion in the nervous system. The central lesion expresses itself through the vasomotor nerves causing a disturbance in the vasomotor balance. The function of the vasomotor nerves is to keep the coats of the vessels in tension, so that a normal volume of blood is retained in the lumen of the blood-vessels. In endarteritis obliterans the vasomotor balance is disturbed. In later stages when the arteries have already become occluded, the vasomotor mechanism is so unbalanced as to paralyze the coats of the blood-vessel.

SYMPTOMS.

"Evidences of vasomotor disturbances come on early in this disease, and with good light, good eyesight and careful examination, this sign can be brought out as one of the earliest manifestations. In comparison with the healthy and normal foot, we can detect a slight pallor of the skin when the limb hangs down. This sign is one of the earliest manifestations of the disease, sometimes appearing years before the pathologic condition in the arteries has progressed to such an extent as to make the interference become appreciable to the examining finger."

The disease occurs most frequently in male Russian Jews, and the majority of the reports upon it in this country have emanated from clinics in New York which serve that city's large Jewish population. Buerger has usually found it occurring in young adults between the ages of twenty and thirty-five or forty years. Upon examination, one or both feet are markedly blanched, almost cadaveric in appearance, cold to the touch, and no pulsations can be observed in either the dorsalis pedis or the posterior tibial artery. When the foot becomes warm, some color gradually returns. "Some patients complain of rheumatic pains in the leg, others are able to walk but a short distance before the advent of paroxysmal shooting, cramp-like pains in the calf of the leg makes it imperative for them to stop short in their walk. Some of these cases give the typical symptoms of intermittent claudication. After months, or in some cases even years, trophic disturbances make their appearance, giving the foot the appearance typical of erythromelalgia. In the pendant position, a bright-red blush of the toes in the anterior part of the foot comes on rather rapidly, extending in some cases to the ankle or slightly above. Soon a blister, hemorrhagic bleb, or an ulcer develops near the tip of one of the toes, usually on the big toe, frequently under the nail, and when this condition ensues the local pain becomes intense." Such trophic disturbances may at all times make little progress; again the adjacent skin may show cyanosis and dry gangrene of the entire toe quickly follow. Sometimes the pain is so intense as to make amputation necessary even before the gangrene process is established.

As the incipient lesion is an inflammatory one, involving the arterial and venous walls, the result, according to Buerger, will naturally be an occlusive thrombosis, gradually giving way to organization and canalization, and finally resulting in a healed product in which the vessel becomes converted into a cord, more or less adherent to its surroundings, in which even the neighboring nerves may become agglutinated and enveloped in fibrotic vascular cord. Thus the syndrome, called by this author thrombo-angitis obliterans, is the result of "the diastrous occlusive thrombosis which signalizes Nature's method of healing a vascular lesion, that has long since disappeared." Buerger's reason for demanding "that the name endarteritis obliterans as applied to thrombo-angitis should be discarded" is because the "occlusive lesion is a thrombotic one, affecting arteries as well as veins

of the extremities and . . . . independent of atherosclerosis or arteriosclerosis."

In Buerger's experience in most cases when the patient comes under observation "the larger arteries, and often the larger veins, are completely obliterated. As a rule the plantar vessels, dorsalic pedis and many of its branches, anterior tibial, posterior tibial, peroneal and sometimes the popiteal, are already completely closed, although any one or more of these vessels may escape. . . . The obturating tissue is for the most part representative or indicative of a healed lesion, or the end stage of a process whose incipiency is marked by an acute inflammation of the vessel wall, with consecutive, red occlusive thrombosis of the affected vessel."

Study of legs amputated for gangrene of the extremity shows and extensive obliteration of the arteries and veins. The appearance of the vessels on cross-section depends upon the stage of occluding process. Usually the vessel is seen to be filled with a grayish or yellowish mass that can be distinctly differentiated from the annular wall of the vessels, firm in consistency and not at all resembling the crescentic or semilunar occluding masses typical of arteriosclerosis. The vessel itself is usually contracted, so that its wall appear somewhat thickened. This picture is characteristic of arteries and veins, which are the seat of a very old obliterating process, and is to be found most frequently in the peripheral portions of the vessels, although at times this type of lesion may extend throughout the whole length of the vessel from the dorsal halluces into the popliteal.

That syphilis may be the causative factor in endarteritis obliterans is still maintained by Ravogli, of Cincinnati, who recently reported a case which he deemed of syphilitic origin. The patient was a woman (all Buerger's patients were men), 63 years old, in whom the blood Wassermann was negative, but who had several miscarriages and a son who was tabetic. Examination of the tibial artery, after amputation of the right foot, showed that the intima was entirely deformed with a tumor formed by small infiltrating cells in the middle of the lumen, where the blood had begun to coagulate. The artery below the thrombus was greatly deformed, the lumen being oblong with signs of canalization "resulting from the efforts of Nature to force the blood through." Ravogli believes that "the rough edges of the broken intima act as factors causing the albumin and fibrin to coagulate and so to obstruct the lumen of the blood vessel. The whole process resembles a specific guma which has broken the endothelium of the intima, and so has produced the thombus." He regards this as a wholly different condition from Buerger's disease, which he characterizes as a progressive one, increasing in gravity and showing more hydraulic alterations with redness, swelling, edema and plugged veins. It usually affects young persons and apparently the immoderate use of tobacco is a factor, "the affection of the blood and the pressure of the blood-vessels finally causing the formation of thrumbus and gangrene."

A number of years ago Turnbull, of the London Hospital's Pathological Institute, stated that "there is evidence that spirochætes may invade the aorta from the intimal surface," but he had never seen a syphilitic inflammation which was confined to the intima of a large elastic artery. An endarteritis which is unaccompanied by an inflammation of the other coats may occur in the small arteries, however, and "is not uncommon in *tuberculosis*, particularly of the small pulmonary arteries, but is rare in *syphilis*. . . Syphilis and tuberculosis, however, usually cause a more chronic arteritis in which changes in the intima are very conspicuous and produce almost complete occlusion of the lumen. The condition is, therefore, freqently referred to as 'endarteritis obliterans.'"

TREATMENT.

Whatever the etiology of the affection may be, the question of treatment of such an exceedingly grave condition is one of acute interest to all who have come in contact with it. The first efforts are naturally directed toward increasing the circulation in the affected extremity, but usually before the patient has come under observation the disease has already progressed so far that gangrene is imminent, or actual "death" of the toes has occurred, and any surgical measures undertaken thereafter can at best only be only regarded as palliative. Ginsburg, in reviewing the subject, tells us that "a considerable amount of experimental laboratory work, performed abroad and in this country, for the purpose of establishing the value of arteriovenous anastomosis in the treatment of this disease, has proved rather conclusively that true reversal of the circulation in the affected limb cannot be accomplished, even though Carrel and Guthrie success-

fully established in their laboratory experiments the possibility of conducting arterial blood to the peripheral capillaries by way of veins. Arteriovenous anastomosis, femoral vein ligation section of the sympathetic fibres about the femoral vessels, multiple ligations of the superficial varicose veins in the affected limb (Lilienthal), high amputation and intravenous saline injections have been proposed and performed by observers all over the world in their efforts to combat circulatory failure in the affected limbs. In addition to these measures, every conceivable form of local treatment to stay the impending or spreading gangrene has been employed with almost uniform failure in the final results obtained.

A similar conclusion in regard to the value of an attempt to rouse the circulation so as to ward off, or stop the progress of gangrene, was reached by Miller, of Philadelphia, in 1910, and reiterated by him in a discussion of Ginsburg's paper. "In the early stages of arterial disease producing ulcers on the toes, erythromelia, extreme pain, tingling, etc., a complete reversal of the circulation *may* relieve the condition if other measures have been tried and have failed. With gangrene of a toe established, one should wait for a line of demarcation. If the process involves several toes or tends to spread to the dorsum of the foot, an anastomosis between the femoral artery and vein with ligation of the external saphenous will *almost certainly* induce a line of demarcation in the region of the ankle. If the superficial and deep veins are also thrombosed, the operation is useless, and should not be done."

Similarly, Stetten, five years later, after a series of investigations and experiments concluded that the arterial circulation to the periphery, even in very advanced arterial diseases, is in every respect better and easier than the retrograde venous circulation; that even if the anastomosis functionates, as it rarely does, there is no possibility of circulatory improvement, but quite the reverse; that the few so-called successful results have probably been obtained more in spite of than because of the operation; and that the operation is dangerous and the results have been most unsatisfactory except in a very small percentage of cases. Of the 136 cases studied by Stetten, thirty deaths occurred immediately or shortly following the operation after an amputation, a mortality of more than 30 per cent. "Furthermore," he remarks, "of the patients who did not die, forty-five later required amputation."

Ligation of the femoral vein has been tried by a number of surgeons but no brilliant successes seem to have been reported. Kogo and Mayesima, of Japan, used 2 per cent intravenous injections of sodium citrate, or Ringer's solution, with a view to decreasing the viscosity of the blood, and their method has since been employed here in conjunction with femoral-vein ligation. Ginsburg had some favorable results from this procedure, but on the whole the reports generally are not encouraging.

"When one witnesses the exruciating pain these patients suffer, with the attendant loss of sleep, often uncontrolled by sedatives, the temptation is quite strong to perform early amputation before, or at the first evidence of peripheral didital death. Haste in amputating, without first employing conservative measures, will often sacrifice extremities which might have been saved. In many instances, even though palpable pulsation of the vessels is wanting, patients will carry limbs for years with lessened pain and arrested disease after one or more toes have been lost. If the process is rapidly gangrenous and conservative measures are indicated, early high amputation should be advised to obviate the greater dangers of delay."

In conclusion, a survey of the literature brings out the fact that there is much confusion in regard to the identity of the clinical syndrome referred to as *endarteritis obliterans,* and leads one to the belief that the so-called neuroses, erythromelalgia and Raynaud's disease may very well be but initial manifestations of a condition of which Buerger's thrombo-angitis obliterans is the terminal stage, although this common etiologic derivation is stoutly denied by many observers.

The chronologic progress of the lesion of the disease is described by Buerger as (1) an acute inflammatory lesion with occlusive thrombosis, the formation of miliary, giant-cell foci; (2) The stage of organization or healing, with the disappearance of the miliary giant-cell foci, the organization and canalization of the clot, the disappearance of the inflammatory products, and (3) The development of fibrotic tissue in the adventitia that binds together the artery, veins and nerves.

Treatment, other than complete amputation of the gangrenous area, is unsatisfactory. Arteriovenous anastomosis, femoral vein ligation, with or without simultaneous intravenous administra-

tion of Ringer's solution, and all local measures, have been tried without sufficient success to warrant their recommendation as a routine.

As the disease seldom comes under observation except in its terminal stages, immediate high amputation appears to be practically the only resort.

REPORT OF CASE

C. H. L. Carpenter, age thirty-eight, admitted to surgical ward at St. Luke's Hospital, February 13, 1923, on account of purplish discoloration of left foot extending up ankle. No definite line of demarcation. Skin cold, with a constant burning tormenting pain in this foot, making sleep impossible.

FAMILY HISTORY—Father died at the age of fifty-six of Bright's disease. Mother living and healthy, age sixty-seven. Two sisters and two brothers living and in good health. One sister died at the age of thirty-four with influenza in 1918.

PAST HISTORY—During childhood had measles, whooping cough and chicken pox. Patient does not remember dates of those diseases but is positive he had no complications. At the age of eighteen had malarial fever. Was under treatment two months. No recurrences. Had no operations. In 1905 fell from a run-away horse and received laceration of forehead, right side, scalp margin, about six inches in length. This was sutured at the old St. Luke's Hospital, patient leaving hospital same day. In 1920, while jumping from a six-foot fence, had a simple fracture of the left ankle, probably Potts. After same hopped on right foot about a block to saloon and started drinking to relieve pain. Patient states the next thing he remembered he was at police station where they had to cut shoe away from foot on account of marked swelling. Ankle was not seen by a physician until the next day, when it was put up in a cast in which it remained for about two months. He then used crutches for about one year, and after that used elastic support for about two years. Since then was able to move foot up and down, but not laterally. Denies ever having had gonorrhea or sore. Was married in September, 1921, lived four months with wife and then separated.

He never used tea, although he drank about six cups of black coffee daily. Seldom chewed tobacco. Smoked an average of thirty ciragettes daily since he was twelve years old. Alcohol was his special weakness. Since the age of eighteen he has averaged at least a pint of liquor a day. At intervals, would often get drunk. Since prohibition went into effect he would drink moonshine. When that was not obtainable would drink lemon extract, bay rum, denatured alcohol, etc. Drinking some of these liquors would cause him to lose memory of affairs.

In the fall of 1920 he was in such nervous condition, due to heavy drinking, that he was not able to work any longer, and he has not done any real work since.

The following are extracts from incomplete hospital records, including St. Luke's Hospital:

On January 23, 1922, patient was admitted to the county hospital on the verge of delerium tremens. Physical examination was negative except for marked nervousness. Wassermann, taken January 26, was negative. Urine negative. No mention made of any leg symptoms. Temperature was normal. Pulse ranged from 75 to 88. He was put on elimination treatment and strychnin, and was discharged (improved) March 1, 1922. Diagnosis: Alcoholic neurosis.

On leaving the County Hospital he did odd jobs around his home and started drinking again, resulting in his former nervousness. Received some office treatment, but as he could not be controlled he was sent to St. Luke's Hospital June 17, 1922. That date was the first time he noticed a peculiar cramping of the calf muscles of both legs, more marked in the left. The next morning spinal puncture was done, which caused him to have severe headache for about one week. Leg symptoms did not appear again during this stay in the hospital. The Spinal Wassermann and Blood Wassermann were negative. Spinal fluid was clear and reduced Fehling solution. Globulin was negative.

There were five lymphocyte cells per cubic millimeter. He was put on elimination and strychnin, and on account of his headache, aspirin. Admission diagnosis: Alcoholic neuritis. Discharge diagnosis: Auto-intoxication. He was discharged July 3, 1922, and was again admitted to St. Luke's Hospital August 22, 1922. At this time he had definite symptoms of diminished circulation in the arteries of both legs, muscular spasms, transitory swellings, formication and temporary loss of sensation. Pain in the left leg was much worse than in the right leg. Started in the toes, ankles and running up the tibia to the knee. When the feet were elevated, the right foot and leg ceased to hurt. The left was not

affected by elevation. He also complained that the muscles in his left arm and hand ached, but this only lasted for a few days.

Physical examination was negative except that the sensation to touch in extremities was present, but patient was unable to locate spot touched. Sensation to pain was somewhat deadened, especially in the left lower leg and foot. Sensation to cold and heat impaired in left leg and foot. No mention was made as to whether or not pulsation of arteries was present. Urine September 8, 1922, was negative. Blood total red, 4,400,000. Total white, 6,700. Differential: Small lymphocytes 23%. Large lymphocytes 15%. Large mononuclear 16%. Transitional 3%. Polynuclear 42%. Sosinophiles 1%. Temperature ranged from 97° to 99° F. Pulse from 75 to 90. Treatment consisted of codein for pain and sodium cacodylate every other day, and hot water bag to limbs. His admission and final diagnosis was alcoholic neuritis. He was discharged September 9, 1923. No progress notes reported.

After discharge from hospital, he received treatment at the City Dispensary twice weekly. He began drinking and developed a staggering gait with difficulty in locomotion.

During the week of Christmas, 1922, the big toe of the left foot turned purple. He was sent from the City Dispensary to the County Hospital January 4, 1923, with a provisional diagnosis of pseudo tabes. Record of physical examination at this time could not be located. Urine January 4, 1923, was negative. Blood Wassermann January 5, 1923, was positive, three plus. He was given one dose of mercurialized serum and one dose of salvarsan.

At the time of admission patient possessed four ounces of denatured alcohol, which he tried to drink. He misled the doctors. His conduct was very bad. Patient states that during this time, two more toes turned a purplish discoloration. After trying to get some alcohol, patient asked for and received his discharge, January 23, 1923. He went home and remained in bed, a local physician gave him H. M. C. tablets for pain, and some vaccines for his leg condition, and finally decided that the foot had to be operated on for drainage of an abscess. On February 12, I first saw this patient at his home and advised him to go to the hospital.

February 13, patient entered the surgical service of St. Luke's Hospital. An admission diagnosis of thrombo-angitis obliterans was made. Examination in accident room at time of admission showed a very faint pulsation of left femoral artery and Scrap's triangle. No other pulsation of left foot felt. Symptoms were those formerly mentioned. Urine February 14, 1923, showed a trace of albumin with rare hyalin casts. Blood: Total red, 6,000. Differential: Small lymphocytes, 9. Large lymphocytes, 9. Polynuclear, 72. No malaria parasites present. Blood Wassermann was negative. X-Ray was negative for any pathology. No shadows of blood vessels were seen. Treatment consisted of codein and morphin for pain. The intravenous Sodium Citrate method was tried, not with hope of success, but with the idea of reducing the high viscosity of blood as found in all types of gangrene. 50 c.c. of 2% sodium citrate was given intravenously twice daily for a total of 500 c.c.

On February 24, left leg was amputated at its middle third. The Moskowizicky hyperemia test for collateral circulation was not performed. Skin above ankle was good. Muscles of the lower third were unusually dark. After removal of foot, the large vessels did not bleed. Catherization and irrigation of arteries to remove clot was not done as it was decided that a much higher amputation was necessary. Patient was a hard subject for anesthesia and further operation postponed for later date.

After operation patient still complained of pain in leg. March 1, five days after first operation, he was again sent to operating room. A red thrombo about three-quarters of an inch long was removed from the mouth of the remaining portion of the femoral artery. Patient was in marked shock. Shock treatment was immediately administered. Since then the patient has made a fairly normal recovery. Discharged from St. Luke's Hospital May 1, 1923. Cured.

Before closing, I want to extend my appreciation to Dr. Ben Manhoff, interne St. Luke's Hospital, for his hearty cooperation in the compilation of this case report.

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# ENDOCERVICITIS*

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No disease of the female organs will compare in frequency, in my opinion, with that of Endocervicitis.

Every doctor of experience has had occasion to verify this statement. It must, therefore, be conceded that no other disease of the uterus has been so ignorantly handled, abused by the tyro, which circumstance is responsible for most of the uncalled-for curettements inflicted on this organ by the general practitioner.

It is consequently of sufficient importance to discuss with you the treatment of this common ailment,—for grave sequelæ often follow neglected cases.

Ill-health, backache, retroflexion, focal and proximal infection, sterility and cancer are some of the prominent, frequent consequences of the disease; cancer, the most-dreaded of all these, being nearly always the sequel of an overlooked endocervicitis, or cervical laceration.

To understand and appreciate the peculiar vulnerability of the cervical canal to infection, it is essential to know something of its anatomy and physiology.

In the first place, it is, physiologically, functionally not a part of the uterus proper. Its functions and its structure are different. It has an independent lymphatic and nervous system, it has a looser muscular stroma, its cavity has a well-known separation, the internal os, from that of the body.

The mucous membrance of the body has a distinct basement layer between that of the mucous glands and the muscular layer. On the other hand, the cervical membrane has no definite base; its racemose glands penetrate to considerable, irregular depths directly into the underlying muscular fibers, thus inter-communicating intimately with the lymphatic channels in the muscular tissue.†

The lymphatic vessels of the cervix travel up on the outside of the organ, between the uterosacal ligaments to several large glands resting on the bifurcation of the iliacs. On the other hand, the lymphatics of the body and fundus of the organ form into large vessels which run outward in the folds of the broad ligaments between the ovary and the tube.

A severe infection may therefore permanently infect the deep cervical endometrium, may travel upward through the uterine cavity, pass into the tubes, and create a permanent salpingitis, without having seriously affected the corporeal endometrium at all. Nature has made the latter important structure wonderfully resistant to trauma, infection and human ignorance.

And so you will realize that infection in the cervical endometrium has two routes of traveling upward, the lymphatic outward and the broad road through the cavity.

Acute and sub-acute endocervicitis, and many cases of chronic endocervicitis are amenable to local treatment, but a great many of the chronic type resist all measures short of a complete removal or destruction of the diseased membrane.

I shall briefly outline only such treatments with which I am personally familiar, the details of which must be left to yourselves.

Prominent among the remedies used for local applications are silver nitrate 10 to 20 per cent solution, tincture of iodine, picric acid 1%, mercurochrome 1%,—usually supplemented by

*Read before the Florida Midland Medical Society, October 24, 1923, at Bartow, Fla.

†The gross appearance of the mucous membrane to the naked eye is in striking contrast with that of the body, the latter being comparatively smooth with very light folds, while the former is arranged in deeper folds or rugæ and form the well-known arbor vitæ appearance.

tamponades of lamb's wool and cotton, containing various medicaments in a glycerine menstruum; glycerite of tannic acid with small quantities of carbolic acid and tincture of iodine is my favorite combination. Boroglyceride, ichthyol, hydrastine and several other remedies are excellent. It is important when making topical applications to the canal not to wound the membrane and to cleanse out the tenacious secretions first, which is best effected by narrow strips of gauze saturated with a strong solution of borax and bicarbonate of soda. This can also be used to scrub the vagina, as ordinary douches do not cleanse the vagina.

Very satisfactory results are often obtained by gently packing the cervical with a narrow strip of gauze saturated with picric acid or mercurochrome solution and removed in a few hours by the patient herself. To be repeated two or three times a week for a short time.

Various gynecologists favor various surgical procedures. Some resort to trachelorraphy, others to curettement of the endocervix without severely disturbing the uterine cavity, except to thoroughly dilate the internal os. One writer lately recommended packing with gauze containing a strong potassium hydrate solution to destroy the endometrium. I have never seen this done. If used, great care must be exercised, as it is a powerful caustic. After curettement, pack the cervix for a few hours with a strip of gauze saturated with picric acid and mercurochrome solution. By leaving an end of the strip projecting from the vulva, the patient may remove it herself.

Exsection of the mucous membrane by the method of Dr. Sturmdorf, of New York, has never failed to give me good results. It consists in cutting out a conical, pyramidical section of the endocervix, the apex reaching to the internal os; the upper and lower margins being then sutured together. The operation is simple, and leaves the cervix to all appearances like a smooth mullipara. No further trouble has been experienced in these cases, the cervix functioning normally, in labors and otherwise.

This, I believe, is far preferable to any mutilating operation.

In concluding this short discussion of the subject, let me entreat you to forego the temptation to indiscriminately curette the corporeal endometrium. . . Of course, when required, dilate thoroughly and curette, remembering that drainage is the essential element in these cases.

## REPORT OF 346 CASES OF APPENDICITIS FROM THE RIVERSIDE HOSPITAL.*

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Six years ago at the Atlantic Beach meeting of this society we reported the cases of appendicitis from the Riverside Hospital for the seven previous years. Our conclusion, in 1917, was as follows: "First, the convalescence is smoother where drainage is not used; second, the average hospital time for a patient was 10½ days in non-drainage against 22½ days in drainage cases; third, in the non-drainage cases there were no deaths, while in those that were drained there was a mortality of 7 per cent."

Our report today consists of 346 patients who were operated upon between April, 1917, and January, 1923. The average hospital time where drainage had not been used was 11.4 days, and 19.4 days where drainage had been used. Where drainage had not become necessary the mortality was .5 per cent; where drainage had become necessary the mortality was 4.6 per cent. The comparison of these two groups of cases demonstrates clearly the advantage in hospital time and immediate mortality, of operating before drainage becomes necessary. We have attempted by our present study to determine, from the ultimate results, the advantage of the early over the delayed operation.

In this group from 1917 to 1923, the oldest patient was 69, the youngest 4 years. The average age was 25.5 years. One hundred and seventy-four were male, 172 were female. There occurred in the following percentages: Pain, 93.4 per cent; nausea, 76.7 per cent; vomiting, 62½ per cent; constipation, 28.9 per cent; fever, 63.8 per cent; tenderness, 97.1 per cent; palpable mass, 11 per cent. Sixty-eight patients, that is, one out of five, had had previous attacks of appendicitis. We find of the acute cases with former attacks that in 75 per cent of them no drainage had been used, while 25 per cent had been drained.

TABLE 1.

| | | |
|---|---|---|
| Total number of cases | 346 | |
| Answered | 196 | |
| Not answered | 150 | |
| Year | 1917 | 1923 |
| Hospital time, no drain | 10.5 days | 11.4 days |
| Hospital time, drainage | 22.5 days | 19.4 days |
| Mortality, non-drainage | 0.0 % | .5 % |
| Mortality, drainage | .7 % | 4.6 % |

*Read before the Fiftieth Annual Meeting of the Florida Medical Association, held at Jacksonville, May 15, 16, 1923.

Oldest, 69 years; youngest, 4 years; average, 25.5 years.

| *Symptoms:* | |
|---|---|
| Pain | 93.4% |
| Nausea | 76.7% |
| Vomiting | 62.5% |
| Constipation | 28.9% |
| Fever | 63.8% |
| Tenderness | 97.1% |
| Mass | 11.0% |

| | |
|---|---|
| *Previous attacks* | 68 |
| Acute non-drainage | 75% |
| Acute drainage | 25% |

Three hundred and forty-six patients came to operation. The postoperative diagnoses were: Acute, 210; abcess, 45; peritonitis, 18; chronic appendicitis, 73. Of those that were diagnosed acute there were: Catarrhal, 49; subacute, 94; gangrenous, 41; recurrent, 12; perforated, 14. Of the chronic type there were 62 sclerotic, 3 catarrhal, and 8 recurrent. Of those with peritonitis, 14 were general and 4 local. At operation we found only 18 with concretions and 184 without; there was no record of 144. Drainage was used in 128 of the 346 patients operated upon.

We received 196 replies from patients to a follow-up letter. One hundred and forty-three pronounced themselves cured, 40 improved, and 13 not cured. The families of two patients reported that they had died of influenza, one six months and one twelve months after leaving the hospital. Eighty-eight per cent of the patients gained in weight on an average of 17 pounds, while twelve per cent lost weight on an average of 14 pounds. The average time in which the patient returned to his work, after leaving the hospital, was eight weeks; the shortest time one day and the longest, one year. Within four weeks after discharge 48 per cent had gone to work and within eight weeks, 77 per cent. Where no drainage had been used the patient's average time before resuming occupation was five weeks; where drainage had been used the time was between six or seven weeks; where peritonitis had been present the average time was eleven weeks.

The end results of our present group show in the acute cases practically the same percentage of cured, improved and not improved, when drainage was used as when it was not used. The figures are 78 per cent cured, 18 per cent improved, and 4 per cent not improved.

Of the 196 patients from whom we received replies, 93 reported that they had at the present time some symptoms which they referred to the gastrointestinal tract. We were surprised to find that of these 93 patients, thirty we had diagnosed as chronic appendicitis, while sixty-three we had diagnosed as acute appendicitis.

TABLE 2.

| *Diagnosis:* | |
|---|---|
| *Acute* | 210 |
| Catarrhal | 49 |
| Sub-acute | 94 |
| Gangrenous | 41 |
| Recurrent | 12 |
| Perforated | 14 |
| *Abscess* | 45 |
| *Peritonitis* | 18 |
| General | 14 |
| Local | 4 |
| *Chronic* | 73 |
| Sclerotic | 62 |
| Catarrhal | 3 |
| Recurrent | 8 |
| *Concretions* | 18 |
| *No concretions* | 184 |
| *No record* | 144 |
| *Drainage* | 128 |
| *No drainage* | 218 |

| *Result:* | |
|---|---|
| *Replies* | 196 |
| "Cured" | 143 |
| "Improved" | 40 |
| "Not Improved" | 13 |
| Died | 2 |
| *Gained Weight* | 88% |
| Average Gain | 17 lbs. |
| *Lost Weight* | 12% |
| Average Loss | 14 lbs. |
| *Time Before Resuming Occupation:* | |
| Average | 8 weeks |
| Longest | 1 year |
| Shortest | 1 day |
| To Occupation within 4 weeks | 48% |
| To Occupation within 8 weeks | 77% |
| Average time when no drainage | 5 weeks |
| Average time when drainage | 6-7 weeks |
| Average time with Peritonitis | 11 weeks |

The symptoms noted by these patients were indigestion 41, pain in the scar 30, constipation 30, gas 11, sour stomach 9, belching 6, nausea 4, vomiting 3, colic 2, dysmenorrhea 1, colitis 1, nervousness 1. Two patients had postoperative abscess and four postoperative hernia.

In the group of cases of acute appendicitis without drainage there were 77 complaints; in the group of chronic, which of course were not drained, 37 complaints. This leaves only 24 complaints distributed among those of the acute with drainage group. With drainage, abcesses, and peritonitis cases, such a finding was surprising, as we quite naturally thought that the more difficult the patient's immediate convalescence, the less complete would be his ultimate relief from symptoms. We had expected the so-called chronic cases to give the greatest number of postoperative symptoms, but to our surprise 63 per cent of the acute non-drainage cases had some complaint as compared with 54.5 per cent of the chronic. We believe that this must be accounted for by the personal equation at operation in diagnosing what is the acutely inflamed, the chronic, or the normal appendix. We know of five cases of postoperative hernia, four of which occurred where drainage had been used; the other occurred in a secondarily infected wound. Four patients have had subsequent abdominal operations; three were gynecological, and one, which belonged to our chronic group, had a stone removed from the right ureter.

It was very instructive to observe how the need for drainage increased the longer the attack had been in progress. In the six instances where the

operation was performed within twelve hours, no drainage was used. When the operation was done between twelve and twenty-four hours drainage was not used in 18 and was used in 11. When the operation was done between twenty-four and forty-eight hours, no drainage was used in twenty and was used in six. After two days and before four days, drainage, while not necessary in twenty-four instances, had become necessary in thirty. After the attack had been in progress four days or more, in only five could the drain be omitted, while it had become necessary to drain in thirty.

This comparison of drainage and non-drainage cases with reference to the time which had elapsed before the operation was performed, show quite clearly the advantage of operating early to avoid drainage. The best time to operate is within the first twelve hours. Our figures indicate that when the operation is done within forty-eight hours the surgeon will need to use drainage only one out of four times; but if the operation has been delayed more than two days he will need to use drainage twice as often as he can omit it. After the fourth day of the attack the process usually subsides or progresses to the stage where it becomes necessary to drain for abscess or peritonitis.

TABLE 3.

| | |
|---|---|
| Patients having complaint following operation..... | 93 |
| Acute Cases ..... | 63 |
| Chronic Cases ..... | 30 |

| | | | |
|---|---|---|---|
| "Indigestion" ..... | 41 | Vomiting ..... | 3 |
| Painful Scar ..... | 30 | Colic ..... | 2 |
| Constipation ..... | 30 | Dysmenorrhœa ..... | 1 |
| "Gas" ..... | 11 | Colitis ..... | 1 |
| "Sour Stomach" ..... | 9 | | |
| Belching ..... | 6 | Nervousness ..... | 1 |
| Nausea ..... | 4 | Hernia ..... | 4 |
| | | Abscess ..... | 2 |

| | | | |
|---|---|---|---|
| Total Complaints ... | 138 | *Complaint:* | |
| Acute, no drain..... | 77 | Of Acute Non-drain | |
| Acute, with drain.... | 24 | cases ..... | 63.6% |
| Chronic ..... | 37 | Of Chronic cases.. | 54.5% |

*Time Before Operation, After Beginning of Attack.*
150 Cases, Acute Type.

| | *No Drain.* | *Drain.* |
|---|---|---|
| Operation, immediate ..... | 6 | 0 |
| Operation, 12-24 hours ..... | 18 | 11 |
| Operation, 24-48 hours ..... | 20 | 6 |
| Operation, 2-4 days ..... | 24 | 30 |
| Operation, after 4 days..... | 5 | 30 |
| Operation, within 48 hours ..... | 44 | 17 |
| Operation, after 48 hours..... | 29 | 60 |

CONCLUSION.

This second report of our cases of appendicitis adds evidence to the wisdom of *early* operation; for we have seen from this: First, that operation before drainage has become necessary results in a shorter hospital time and a far lower mortality; second, that our patients return to their occupation earlier where drainage has not been used; third, that the earlier the operation the less frequent will be the need for drainage.

## THE MECHANICS OF PELVIC REPAIR*

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As long as the world lasts the vast majority of physicians who are delivering children will encounter the problem of cervical and perineal lacerations and their immediate repair. In exact proportion to their solicitude for their patient and their anatomical knowledge of the pelvic and perineal structures will the deferred repair work of the gyneologist and the general surgeon be diminished.

A careful and painstaking examination of the cervix and perineum, immediately following the third stage of labor, and the prompt repair of any laceration discovered during this examination, is the duty of every obstetrician. This procedure, routinely carried out, will markedly diminish maternal morbidity and we will have a race of mothers more willing to bring children into the world.

Nothing is more distressing than to see a fine specimen of womanhood wracked by backache, discouraged by leucorrhea and distressed by a train of bladder symptoms, trying to be a patient mother and a loving wife; and nothing is more gratifying than to see the change in this lady when she has been relieved of her symptoms by a properly performed repair of the lacerations and a lasting replacement of her displaced organs.

In order to properly repair lacerations and restore the anatomical relations of the pelvic structures, we must first be conversant with the normal anatomy of the parts and must thoroughly understand the progressive steps which led to this anatomical catastrophe. Unfortunately we are not in absolute accord on either of the questions and many of us have, for years, adopted a routine procedure to meet all degrees of misplacement from simple retrocession to prolapsus, without adequate consideration of the problems

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to be conquered. Others of us have searched for the bizarre in remedial operative procedures to the extent that we have overlooked the better simple methods.

The first problem to be considered is the source of uterine support and equilibrium. Here we have two schools. The one declares that the uterus is supported from above by its ligaments and the other that it is supported from below by the perineal body—whatever that may be. This question is easily and definitely settled by an examination of those cases of third-degree laceration of the perineum, in which cases the uterus will invariably be found in perfect position. I operated but yesterday upon a case of third-degree laceration of ten years' standing and found the uterus in absolute anatomically correct position.

This brings us to the declaration which we make with perfect assurance, that the uterus is supported from above and for the most part by its ligaments. I say, "for the most part," advisedly because I believe that intra-abdominal pressure plays no small part in maintaining a normal anteversion. It is well known that the uterus has more and stronger ligaments, weight for weight, than any other organ in the body, and the natural presumption is that these are for the purpose of support.

It is this bald statement, "that the uterus is supported from above by its ligaments," that has led us into error in our corrective operation procedures. We have gotten such a large percentage of cures of retrodisplacements by the simple or difficult shortening of the round ligaments, the simplicity or difficulty of the procedure being dependent upon the type of shortening elected, that we have been inclined to overlook or at least minimize our 30 per cent of failures. Anyone who operates will tackle a retrodisplacement with perfect assurance and be thoroughly satisfied with some method of shortening of the round ligaments. Most men who operate will as readily tackle a decensus or a prolapsus and without, it is true, the same ready assurance, will drag the fundus up as high as possible and fix it, more or less securely, to the anterior wall, or do a hysterectomy and not feel conscience-stricken when the patient fails to get rid of the distressing bladder symptoms or when he has changed the symptomatology from a constant bearing-down to a constant pulling sensation.

It is the purpose of this paper to discuss the mechanics involved in normal uterine position, in the causes of malpositions, and in the reparative processes undertaken by the surgeon.

I have never been able to forget Dr. J. Riddle Goffe's statement as to the support of the uterus as he gave it to us when I was a medical student. I quote verbatim:

"The uterus is supported, in a state of unstable equilibrium, in the midpelvis, by its ligaments, between the rectum, upon which it encroaches when retrodisplaced, and the bladder, which, as it fills, displaces it backward temporarily * * *"

He laid great stress, as all gynecologists of his time and school, upon the importance of the round ligaments as the mainstays of support.

As years roll by and experience piles up I am more and more inclined to the position that the round ligaments serve a three-fold function:

(1) To hold the pregnant uterus forward until it shall have attained sufficient size to reach above the promontory of the sacrum, upon which it can rest, thereby preventing retrodisplacement by weight, with consequent chance of incarceration and inevitable miscarriage.

(2) To return, by their elasticity, to the normal position, a uterus which has been displaced backward by a distended bladder.

(3) To serve as a crutch for us poor mortals who would be surgeons, for their muscular strength is such that they will usually support a uterus when we have dragged it into position by some one of the various operations performed upon them, despite the fact that we have not remedied the principal anatomical defect.

It is only recently that it has been forcibly brought to my attention that the uterus is supported in the same fashion that our commonly used pessary is held in place; namely, by counter pressure or pull against a pivotal point. We can hold an ordinary lead pencil in the perpendicular position either by placing the ball of the thumb and index finger of one hand against one side of the pencil and the ball of the index finger of the other hand upon the opposite side; or by exerting a pull upon opposite sides instead of a pressure. The illustration holds good for the uterus. The pivotal point is the internal os at which point the uterus is pulled upward and backward by the uterosacral ligaments while the forward pull is accomplished by the round ligaments and the uterovesical ligaments. In addition we have the force of intra-abdominal pressure applied to the posterior face of the uterus to aid in keeping it in normal anteversion. The same

force when misapplied to the top of the fundus or the anterior face aids in causing decensus and retroversion.

Most of us as readily overlook the fact that, when the woman is in the standing posture, the normal uterus is about at right angles to the axis of the body, as we overlook the pivotal point and fail to attack the stretched-out uterosacral ligaments in the correction of retrodisplacements. This point has been forcibly brought to my attention by the results obtained in attacking the problem from below and shortening the uterosacral ligaments vaginally by the method of Jellett.

In short, I believe that one can secure anatomical results by restoring only the uterosacral ligaments to their normal position. But in doing this we could commit as great an error as we are now committing in shortening only the round ligaments. For, in cases of backward displacements, the round ligaments are stretched out and will have to be shortened to function properly as stated above in functions (1) and (2) of the round ligaments.

The vast majority of cases of retrodisplacements are caused by perineal lacerations. It is to this class of cases that we intend to confine ourselves in this paper.

A fair question from a member of the school who hold that the uterus is supported from below would be, "If the uterus is not supported from below, why do lacerations of the perineum cause retrodisplacements?"

The answer is simple. The functions of the levator ani are:

(1) To lift the perineum over the advancing fecal mass after directing it towards the anus, in defecation.

(2) To retract the perineum before the advancing fetal head after directing it towards the vaginal orifice.

(3) To prevent hernia of the rectum into the vagina.

Lacerations of the perineum are usually a separation of the segments of the levator ani muscle either in the midline or to one side or the other of the perineum. This separation allows a true hernia of the rectum into the vagina which we have named rectocele.

The fecal current is constantly directed downward towards the anus. As it enters the rectum from the sigmoid it is directed against the curve of the sacrum. The sacrum being harder and unyielding, the current is deflected upward towards the vagina. The levator contracts, being harder than the fecal mass, it, in turn, deflects it against the sphincter ani, which is lifted up by the contraction of the levator and stimulated to open and the fecal mass is born.

When the levator is torn, the fecal mass, deflected from the sacrum, meets no obstruction other than the anterior rectal and the posterior vaginal walls, and it bulges into the vagina through this hernia until the posterior vaginal wall is stretched to its capacity, before it is deflected against the sphincter. The degree to which this occurs depends upon the extent of the laceration. If the sphincter too is torn there is nothing to keep the fecal mass in and, consequently, there is no stretching of the posterior vaginal wall. With the sphincter intact, the posterior wall is stretched to capacity and each stretching increases the capacity until I have known a patient to state that she could not evacuate her bowels at all until she had first pushed the rectocele back into her vagina with her finger.

This stretching of the posterior vaginal wall shortens the distance between the introitus and the internal os, or the attachment of the posterior wall of the vagina to the posterior wall of the uterus which is at the internal os, and causes a direct pull on the pivotal point of support, with consequent stretching of the uterosacral ligaments permitting the decensus and secondary stretching of the round ligaments allowing the uterus to drop backward away from the anterior wall so that the force of intra-abdominal pressure is directed upon the top of the fundus, which would theoretically, and frequently does practically, carry us through all the steps from retrocession to extrusion of the fundus from the vagina.

Hence we must repair our perineum and repair it properly, by approximating the separated segments of the levator ani muscle, if we wish our replaced uterus to remain in position.

A factor which must not be overlooked in the causation of retrodisplacements, is subinvolution following parturition, in which case a heavy uterus is not properly held forward by relaxed round ligaments and the force of intra-abdominal pressure misapplied to the anterior face of the uterus retroverts it and holds it in that position. This factor can be successfully combatted by the obstetrician by posture following delivery. Allow the patient to sit up in bed early, before the fundus has involuted to a position below the prom-

ontory of the sacrum, and make a routine examination on the tenth day and the sixth week and insert a well-fitting pessary if you find the uterus retroposed.

Lacerations of the anterior vaginal wall, while not as frequent as those of the posterior wall, are nevertheless not uncommon. They are usually caused by a full bladder getting caught between the symphysis and the advancing head so that, with each pain, the advancing head, by pressure upon the urethra, prevents the bladder emptying itself and at the same time extrudes the full bladder from the vagina until the limit of stretching is reached, and the fascia supporting the bladder ruptures and allows a hernia of the bladder into the vagina. It may also be ruptured by too forcible delivery of the anterior shoulder under the symphysis and by the blade of the forceps carelessly withdrawn when the head is in the introitus.

This laceration causes one of the most distressing symptoms met with in gynecology, namely cystocele. The bladder pouches down into the vagina and in efforts at stool protrudes from the vulva. What was once a flat trigone, on a level with the urethra, now becomes a pouch which always contains urine which the patient is unable to void and we have frequency of urination due to two causes: First, the bladder never entirely empties itself and consequently becomes full again much more quickly. Second, we have residual urine always present which decomposes and causes trigonitis with resultant frequency and urgency of urination. If you look into these bladders you will readily see that the floor of the bladder has changed its attachment on the fundus. It has slid down to a greater or less degree dependent upon the extent and long-standing of the laceration. The cause of the symptomatology is the pouching of the bladder. To relieve the symptom you must restore the trigone of the bladder to its normal position on a level with the urinary meatus. Many operations have been devised to cure cystocele, but most of them without due consideration for the mechanical cause or the anatomical remedy. The interposition operation is very popular. In this operation we defy anatomical considerations, sterilize the patient, and exchange a pouch in front for one behind. The Emmet operation of puckering the anterior wall is but a poor makeshift. The most common operation is that of a high ventral fixation of the uterus. To employ this is but a confession of one's inability to properly cope with the situation.

The only anatomical operation is the Goffe cystocele operation, in which the bladder is entirely freed from its attachments and reattached higher up on the fundus with the trigone spread out in its normal position by means of three sutures. A good addition to this operation is the Rawls cystocele operation which laps the fascia of the interior wall much like the Mayo operation for ventral hernia. I have done this operation many times and have had the patient cystoscoped before and after operation to demonstrate the anatomical correctness of the operation, and the results prove themselves that you have as nearly an anatomically correct position of your bladder as is possible under the conditions. The patients are relieved of their symptoms and do no get recurrences.

The other laceration that we have to consider in this paper is laceration of the cervix. This laceration is caused by forceps, by avulsion, by pituitrin used when it is really contra-indicated, and not infrequently by inability of the cervix to dilate due to pathological changes due to age or disease. There are three functionating parts of the cervix. The internal os keeps infection out and the fetus in. The longitudinal muscle fibers are the medium by which the cervix is thinned out in the first stage of labor. They contract and draw the cervix up into the body of the uterus. And the glandular part of the cervix which, by secreting a thick tenacious mucus, keeps the cervix plugged and aids in keeping out infection, and they also lubricate the cervix with a thinner mucus.

We are concerned in surgery in removing diseased tissue and either leaving the parts in, or restoring them to, as near the anatomical normal as possible.

In the presence of a cervical laceration of old standing we have a secondary infection of the glands which cannot be cured except by removal of the diseased tissue. We have to restore the cervix so that it will function anatomically; this means that we must conserve the longitudinal muscle fibres. The only operation which meets both of these indications and gives us a nearly anatomically perfect cervix is the Sturmdorf operation which reams out the diseased glands and leaves the longitudinal muscle fibres, covering in the defect with a flap from the vaginal mucosa of the cervix.

CONCLUSIONS.

Our first duty is to prevent disease. Prompt repair after obstetrical procedures, the avoidance of the improper use of instruments or oxitoxics, precautions to keep the bladder empty in the second stage of labor, and routine examinations after delivery.

Our second duty is to restore to as nearly anatomical perfection as is possible. Consider the mechanical defects and by a proper understanding of the mechanics of the cause and of the effect choose the operation which will give you the nearest approach to normal. Consider the pivotal point and attack the uterosacral ligaments as well as the round in retrodisplacements. In operating for cystocele replace the bladder as nature placed it, and leave the functioning longitudinal muscle fibers in the cervix.

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## DERMATITIS VENENATA.*

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Dermatitis Venenata is the name used generally by most medical men for the vesicular dermatitis produced by contact with certain common plants like ivy or sumac and, as such, it would hardly appear appropriate for an extensive study at the annual gathering of our State Medical Association. The writer wishes to assure you that such is not the case, that the subject of dermatitis venenata embraces a never-ending list of plant and chemical irritants that are productive at times of inflammations of the skin of varying degrees. Many of these irritants, both vegetable or chemical, are more or less irritants to all skins, some are harmless, or practically so, to a large number, while in others again the action is so exceptional as to be due to some peculiar idiosyncrasy. Among the well-known chemicals or drugs, which are known to produce an inflammation of the skin, may be mentioned sulphur, mercurials, arnica, mustard, cantharides, iodine, iodoform, procaine, carbolic acid, turpentine, tar, resorcin, dyestuffs, coal-tar products, varnish and stains, and many others. Among irritating articles and wearing apparel of everyday use, irritant to some individuals, may be mentioned, strong medicated soaps, anilin and coralin dyes, especially in socks and veils. One of the most frequent cases of dermatitis venenata, and for obvious reasons occurring mostly in women, is hair-dye preparations that are harmless to the great majority, but will, in certain susceptible individuals, produce a dermatitis that is not only on the adjacent skin to which the hair tonic has been applied, but which may extend over the entire body. Certain cosmetic creams extolled for beautifying the complexion of the fair sex, even with printed advertisements on the jar of cream, asserting the harmlessness of the "simple" preparation, have been repeatedly found to contain a certain percentage of ammoniated mercury, and this used for some time will often produce a marked dermatitis.

Pyrethrum, or "insect powders or smudge", is at times the cause of a very violent and unusual dermatitis. The writer called attention to a case of this kind at the last annual meeting of the state society held at Havana, in the discussion of a paper on "Focal Infections".

The various trade dermatitis should be mentioned, i. e., inflammations of the hands, face and at times other parts of the body, from one's occupation, due to the constant handling of sugar, flour, polishing materials, paints, tobaccos, and similar substances. Metol and other chemicals used in photography are occasionally responsible for a very troublesome dermatitis. Quite recently numerous reports have been seen in the medical literature in regard to a troublesome dermatitis developing on the hands of dentists and physicians who are accustomed to the use of procaine anesthesia in their surgical work. The arsphenamine group is credited with being productive of a dermatitis on the hands of the medical men through contact with this chemical in the giving of injections.

Workers in petroleum products, especially coal-tar and its compounds, occasionally exhibit various kinds of cutaneous lesions, namely warty growths, chronic erythemato-squamous skins, papular and pustular eruptions.

Plants furnish a prolific source of skin irritations, idiosyncrasy plays an important part. The various plants that may provoke such irritations in susceptible individuals are at least seventy, and the known list is gradually increasing. The most common and best known of the plant group,

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which produce dermatitis venenata is the rhus family. In seasons these plants produce the greatest number of cases of dermatitis venenata. The several plants of the rhus family are somewhat common in various parts of the country, and some are more poisonous than others. The rhus toxicodendron or ivy vine and the rhus venenata or poison sumac are the two most common of the rhus family, the former, in the writer's opinion, is more prevalent in Florida than the sumac; then, too, for some reason, rhus dermatitis does not appear so frequently in this climate of ours as it does further north. One thing certain, poison ivy is seen everywhere in our state, and it may be that we, who have been constantly exposed to the plant, have developed an immunity to this plant irritant; those who have lived in the city and make an occasional visit to the country where the rhus is prevalent at times develop a dermatitis at the least exposure. The clinical picture of this dermatitis is more pronounced from the poison from the rhus venenata than from the ivy. Aside from the two mentioned plant irritants, we have others of the rhus family which are rather limited in their distribution, the rhus diversiloba and rhus pumila, the former a climbing and the latter a creeping shrub, neither of which is familiar to the writer. Various plants are attributed to the production of skin irritations, they being too numerous to mention, but a few of the most common may be of interest. Nettle, primrose, smart-weed, oleander, balm of gilead, May apple, cowage, tomato plant, rhus, chrysanthemum and arbor vitæ, are a few of the best known.

The symptoms of dermatitis venenata are varied, depending upon the individual susceptibility of the patient, and upon the character and duration of exposure to the irritating substance. A simple dermatitis with a slight burning and itching sensation, or a marked vesiculation or gangrenous sloughing of the skin with the attendant pain and discomfort may be the case. In most instances the dermatitis runs an acute course and terminates spontaneously in recovery.

In subjects eczematously inclined, the artificial dermatitis may develop into a true eczema, more especially after having had two or more attacks of the dermatitis, or from a persistent exposure to the irritant.

It is not infrequent to encounter surgeons and nurses who in their preliminary cleansing of hands preparatory to an operation, have produced a dermatitis of the hands, caused by the use of strong soaps such as sapo verides or the use of lysol, bichloride of mercury solutions or tincture of iodine. This dermatitis may vary from a simple mild scaling, with some attending discomfort to an acute vesicular condition not unlike an acute eczema, with all the discomfort of the latter affection.

Thanks to our more humane and scientific training, we do not see so much of the formerly frequent dermatitis, due to the use of iodoform on the skin, but in the years gone by, when this drug was used for all and any kind of pus infection of the skin, it was not at all uncommon to see cases of iodoform dermatitis. Sulphur dermatitis is a very common condition met, usually brought about by the patient himself using the ordinary sulphur ointment on the skin indefinitely, for the cure of some supposed parasitic itch. Oftentimes the condition is produced by the physician by his ordering some form of sulphur ointment without giving any definite direction for the use of the same. A sulphur dermatitis is not difficult to recognize, but if care is not taken a diagnosis of scabies or urticaria may be wrongly made; especially of the former with a history of other cases with the same kind of itching in the household. The subjective symptoms of a dermatitis from the use of sulphur ointment are those of formication, some burning and itching, the patient describing his feelings as that of having ants on his skin. There may be some slight redness present, even not unlike urticaria, and if the ointment has been used for some length of time and extensively so, the eruption symptoms will not be unlike an eczema of the seborrheic type.

The use of arnica tincture has been the cause of some cases of violent dermatitis which may extend beyond the area where the medicine was applied, and there may be present an eruption of an erythematous, erysipelatous, bullous or even gangrenous type. The symptoms of the dermatitis following the prolonged or improper use of the ointment of chrysarobin, oidine, mercury, resorcin, and tar vary with the particular chemical used in the ointment base. The first named usually produces a diffuse erythematous eruption, even

to the point of vesiculation, the same may be said of iodine, while from the applications of mercurial ointments or tar, especially on the hairy regions of the body, the eruption may be of a follicular and pustular type.

At this point attention is called to the dermatitis that is often encountered after the use of an ointment on the skin, and an investigation having been made for this unexpected dermatitis, it is ascertained that the ointment at question was prepared with a rancid base, and the cause of the dermatitis can then be placed not to the chemicals incorporated in the ointment, but to the bacteria in the spoiled ointment.

The symptoms of the ordinary dermatitis due to contact to the irritations from a poisonous plant as the rhus species are dependent somewhat on the locations and personal resistance of the individual. In some instances the inflammatory reaction is such that one can scarcely believe that the case at question is one due to rhus. Itching is at times violent, vesiculation and swelling being all out of proportions to the usual picture of a simple dermatitis.

As a rule it is not at all difficult to make a diagnosis of dermatitis venenata, but in some instances it is impossible to ascertain what particular irritant is the cause of the inflammation. In the case of rhus poisoning the diagnosis presents no points of difficulty, the same to some extent being true after ascertaining that the patient has an occupation in which the parts are exposed to irritant chemicals, also in the case with the individual who has been using ointments of known chemical, irritant properties. But one has to use some skill in differentiating the present dermatitis from the original trouble for which the patient has been treated. In most cases the dermatitis is confined to certain parts, though this is not constant. The face and hands or other uncovered parts showing an erythematous condition, itching and of an acute type of inflammation, one is very likely to consider a dermatitis venenata, and a search should be made for the active cause of the inflammation.

In a consideration of dermatitis venenata it might not be out of order to call your attention to the fact that, in recent years, the general medical man and dermatologist as well have gradually reduced this group of skin affections that were formally defined as eczemas to a very insignificant issue. In other words, the promiscuous use of the term eczema for any and all itching skin affection of a doubtful origin is now past, just as much so as the application of the term malaria to doubtful illnesses. It is true that we do still occasionally see a dermatitis that can rightly be placed in the eczema column, but the vast majority of the recurring itchy skin conditions can be rightfully placed by a careful study of both local and constitutional conditions. Unquestionably external irritating factors, mostly chemical, at times vegetable or bacterial, can be found that are the active causes of recurring skin affections. Understand that an eczema is defined as an inflammation of the skin with certain definite symptoms due to some internal cause, generally unknown, while a dermatitis has about the same definition, only the external cause is the issue. I believe if we carry our studies further, a time will come when there will not be any dermatosis existing that can be called an eczema.

At the present time we still speak of the itching and resulting skin lesions from the scratching of a diabetic patient as an eczema. Carrying the analyses through the long list of recurring itchy skin affection, we will come to the conclusion that after all an eczema is nothing more than a symptom, just as a headache is a symptom in any other disease. We have itching and associated symptoms of an eczema in the case of anaphylaxis from certain foods, focal infection, and from nephritis.

In conclusion, attention is called to possibilities of the discovery of some local irritant in any and all itching skin affection of unknown origin. All dermatitis do not itch, but the vast majority have this symptom sometime during the course of the inflammation. In the face of an eruptive condition seen on the uncovered parts of the body, be this dermatitis recent or of long standing or recurrent, a search must be made for some local factor as causative. It may be very well to make a thorough physical examination for focal infections, food anaphylaxis, digestive or nutritional facts, renal disturbances, or other possible general pathology, but it must not be lost sight of that the entire trouble may be due to some simple chemical irritant that has developed a dermatitis venenata. The writer has in mind a case of dermatitis venenata of the face and hands of a furniture dealer, which had been recurring

with the most discomforting symptoms at the rate of three or more attacks a year, for the past four years. This condition had been diagnosed as an eczema by several medical men; the treatment, at best, being hardly palliative. The case when first seen by the writer presented all the marks of a dermatitis venenata, plus a general run-down nervous system from loss of sleep and the discomforts of the inflamed, irritated, itching skin. A simple calamine oxide of zinc lotion, supplemented with a boric acid ointment and a vacation from the furniture store, produced perfect results in ten days. A return to the business a few weeks hence was followed by a recurrence of the dermatitis.

This man eventually had to give up his work for some other occupation. In the preceding case cited, re the furniture man, unquestionably the exciting irritant was from certain varnishes or stains used in the manufacture of furniture; the skin of the patient had become hypersensitive to the least contact with the irritant.

In the treatment of any acute inflammation of the skin, bland soothing applications are in order, for the treatment of rhus poisoning, ointments or any oily preparation are not indicated in the early stage of the inflammation. A vigorous soap bath is of value at the beginning of the dermatitis, followed by the free use of alcohol. Calamine oxide of zinc lotion, as for example, is very serviceable for the itching in the desquamating stage.

**Phenol, 40 to 80 grains.**
**Boric acid, 40 grains.**
**Pulverized prepared calamine, Pulverized zinc oxide. U. S. P. aa drams 4.**
**Glycerine, drams 2.**
**Lime aqua, rose aqua, aa qs. ounces 4.**

This same lotion is of value in any dermatitis, the official lotio niger, "black wash," i. e., calomel and lime water, is very valuable; phenol 2 to 4 per cent may be added for the antipruritic effect. Another good lotion for dermatitis venenata of plant origin is 2 to 4 per cent aluminum acetate in equal parts of alcohol and rose water. Sometimes a saturated boric acid solution applied ice-cold will give the most relief from the itching and burning in the erythematous stage of a dermatitis.

Simple cold cream and boric acid ointment, with the addition in some cases of 2 per cent phenol, will suffice for the local treatment in dermatitis venenata from the use of sulphur, tar and other irritating chemicals.

Ultra-violet rays from the Alpine or similar light is valuable, will lessen the vesiculation and control the itching. The same, to a less degree, may be said of the violet ray from the therapeutic light.

Generally speaking, the removal of the cause of the dermatitis and the application of mild soothing applications of either lotions or ointments will cure the trouble, but at times nerve sedatives must be given to quiet the sufferer. Veronal or bromides for a few doses will suffice. This, with a few days quiet, with light diet and good elimination, will be of service.

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## IMPORTANCE OF BRONCHOSCOPY.

WM. JEROME KNAUER, M. D.,
Jacksonville, Fla.

Bronchoscopy, although new, is older than many of our modern doctors imagine and is now aptly proven to be beyond an experimental stage, although the author expects much in its development in the on-coming years. To Killian the title "Father of Bronchoscopy" has been given, for in 1897 he removed a foreign body from a Bronchus. To such men as Von Schrotter, Piniazek, Lynch, Yankauer, Mosher, and Jackson are due real credit for the advances made in Bronchoscopy, and especially to Jackson, for practically his life has been spent in the perfection of his instruments and technique which have certainly brought the field forward.

In almost any medical magazine of today one can usually find an account of the removal of a foreign body from the trachea or bronchi, and although the author has a number of interesting cases, he deems it useless to go into details of any case, only to say, that the procedure can be done either under local or general anesthesia with little or no danger to the patient, for they are usually up and about in twenty-four hours afterward.

The thing I wish to emphasize is the use of the Bronchoscope in the field of pulmonary diagnosis and therapy, for it seems that it is with hesitancy that the average internist is willing to send a pulmonary case to a Broncho-

scopist and I think the advances made in this line should be stressed. One only has to visit the clinics of Jackson in Philadelphia and Yankauer in New York to really see what Bronchoscopy means, especially to chronic lung conditions and neoplasms.

Benign neoplasms can be recognized and treated; radium can be brought in direct contact with a malignancy; stenosis of the trachea can be dilated; tracheal compression can at once be determined; and last but not least chronic pulmonary suppuration (under which is included lung abscess and Bronchiectasis) which has so long with few exceptions been one of Medicine's failures, is now coped with by irrigation and aspiration through the Bronchoscope. All over the country 10% to 12% clinical cures are reported of chronic lung suppuration and all cases treated show an improvement. This to me is certainly sufficient to warrant an investigation of every obstinate lung case with the Bronchoscope.

CONCLUSIONS.

(1) That Bronchoscopy although new is older than we suppose.

(2) That one may enter the trachea and bronchi under local or general anesthesia with little or no danger to the patient.

(3) That in obscure lung pathology, a Bronchoscopic examination should be done.

(4) That the most successful treatment of chronic lung suppuration is through the Bronchoscope.

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## PROPAGANDA FOR REFORM.

THE MENACE OF "MOONSHINE" WHISKY.—The untoward results of overindulgence in whisky have usually been ascribed to its alcoholic content, although now and then ill-defined "by-products" or fermentation present in the distillate have been charged with a toxicity out of all proportion to the quantities ordinarily present. The indefinite "fusel oil" and furfurol were often designated as the pernicious ingredients. In properly made and suitably aged whiskies, such constituents could at most play a minor part in the intoxication produced. While alcoholism is less prevalent today than it was a few years ago, its attendant and after effects on its victims are more serious. The impression is broadcast that this is due to the "moonshine" liquor which is being distributed. The danger from the presence of methyl alcohol in "moonshine" whisky is well-known. Its presence is explained by the use of denatured alcohol (which may contain methyl alcohol) in the preparation of "moonshine" whisky. However, the investigation of the federal authorities indicate that ordinarily methyl alcohol is not the pernicious constituent of illicit whisky, but instead the product has been found often to contain a high proportion of acetaldehyd. The "ranker" the liquor, the higher the aldehyd content. (Jour. A. M. A., Nov. 10, 1923, p. 1611.)

THE COMPOSITION OF SOME COMPLEXION CLAYS.—Next to nostrums sold for the alleged rejuvenation of the male, the most popular form of contemporary charlantary lies in the exploitation of alleged beautifiers for the female. During the last year or two the cosmetic market has been glutted with a veritable avalanche of so-called complexion clays and face packs. The A. M. A. Chemical Laboratory has analysed the following preparations of this class: "Terra-derma-lax," "Boncilla," "Domino Complexion Clay," "Mineralava," "Ryerson's Forty Minute Beauty Clay." The laboratory reports that each of the preparations was a bluish mass of the consistency of soft putty and resembled a mixture of clay and water. With one exception, no substance other than clay, water and perfume was found in the preparations. Domino Complexion Clay contained about five per cent of glycerin and about 0.2 per cent of a salicylate, probably sodium salicylate. The examination indicates that the clays analysed are not high-grade products, nor carefully purified before being used. (Jour. A. M. A., Nov. 10, 1923, p. 1624.)

PREGL'S SOLUTION.—It has been stated that Pregl's (isotonic) iodin solution is probably prepared by treating a solution of sodium carbonate with finely powdered iodin. When the iodin has dissolved, sodium chlorid is added and the solution diluted to a definite volume. The product is stated to contain sodium ions, free iodin, iodid ions, hypoidite and iodate ions—this

in addition to the carbonate and chlorid. A proprietary brand of this solution is sold in Germany as "Presoiod." All favorable reports of the therapeutic use of Pregl's solution have had their genesis from apparently biased sources. (Jour. A. M. A., Nov. 10, 1923, p. 1628.)

IRIDINOL.—The Council on Pharmacy and Chemistry reports that about fifteen years ago "Iridium (Medicinal)" was put on the market by the Platinum Co. of America, and the same company manufactured "Iridinol" which was marketed by the P. H. Potter Chemical Co. (now P. H. Potter and Sons, Inc.), New York. Both products were, at that time, claimed to contain iridium and were marketed for a high price with grossly misleading claims for the efficiency of iridium as a therapeutic agent. Iridium (Medicinal) seems to have been abandoned, but Iridinol, advertised by P. H. Potter and Sons, Inc., as an "ethical preparation" continues to be sold. In the earliest advertising Iridinol was claimed to be a "nontoxic preparation of iridium." At that time the A. M. A. Chemical Laboratory was unable to detect the presence of iridium, and it was concluded that no very large amounts of iridium could have been present. Regardless of the presence or absence of iridium, there is not the slightest evidence for the therapeutic value of this metal in the conditions for which it is recommended by the exploiters of Iridinol. In the present advertising for Iridinol no definite claim is made for the presence of iridium. Instead the agents merely imply its presence. Iridinol is recommended by the exploiters in anemia, rheumatism, specific blood diseases, diseases of the nose and throat, of stomach organs, liver and kidneys, of the nervous system, diseases of children and as a systematic alterative. In view of the long-continued activities of P. H. Potter and Sons, Inc., for the use of Iridinol, the Council authorized publication of a report for the information of physicians who may be importuned to use it. (Jour. A. M. A., Nov. 24, 1923, p. 1807.)

WHOOPING COUGH VACCINE.—In a series of articles on biologic theraphy prepared under the auspices of the Council on Pharmacy and Chemistry, W. C. Davison (The Journal, Jan. 22, 1921, p. 242) concluded a review of the use of pertussis bacillus vaccine thus: "In summing up the prolific and somewhat contradictory literature on this subject, it may be concluded that injections of Bordet-Gengou bacillus vaccines may have a slight though unreliable prophylactic effect, and that therapeutic inoculations are of practically no value. Further experiments are necessary to raise this procedure from the limbo of nonspecific therapy." The Council on Pharmacy and Chemistry has accepted pertussis bacillus vaccine for New and Nonofficial Remedies, but states in regard to the usefulness of the product: "The evidence indicating that it is of value for either prevention or treatment is very questionable and the reports are conflicting." (Jour. A. M. A., Nov. 24, 1923, p. 1809.)

THE ACTION OF ARSENICALS IN THE BODY.—Voegtlin and his associates in the Hygienic Laboratory of the U. S. Public Health Service have observed that certain compounds containing sulphur groups in the SH form are able to counteract the toxic effects produced by arsenoxid on trypanosomes and a representative mammal. They advance the theory that arsenic in certain trivalent forms is a specified poison for the SH group in the trypanosome organism, and that arsenic causes death of the cells by interfering with the oxidative processes. Voegtlin and his associates concluded that the failures reported in the treatment of the later stages of syphilis are due to the fact that arsphenamin, neoarsphenamin and silver arsphenamin lack the essential penetrated power of the infected tissues, and for this reason, they do not reach the last parasites in sufficient amounts to cause their death. In the effort to secure a more complete sterilization of syphilitic patients in the more advanced stages of the disease, sulpharsphenamin, typarsamid, and 3-amino 4-oxyphenol arsonic acid are suggested for trial as remedies of superior penetrative power. (Jour. A. M. A., October 27, 1923, p. 1442.)

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## TRAUMATIC NEUROSES.

Definitions of the term traumatic neurosis always contain the condition that organic lesions are absent. Nevertheless, ever since 1866, when Erichsen published his book "On Railway and Other Injuries of the Nervous System," opinion as to the nature of these disorders has been divided into two schools, emotional and commotional. Charcot and many others demonstrated that, in the great majority of cases at least, the symptoms are due to the mental attitude of the patient toward the whole situation in which he finds himself; the trauma is only the occasion or excuse for escaping from the situation, and the disorder is primarily emotional. The other school, in which Oppenheim was a prominent leader, maintains that, while many cases are emotional in origin, others, in spite of the absence of evidences of gross injury, must have some structural lesion, probably minute and yet unrecognized. Great impetus was given to this controversy during the war. Mott, in England, examined the nervous tissues from men who had died instantly from, or soon after exposure to a shell explosion without evidence of gross bodily injury, and found multiple minute hemorrhages scattered through the nervous system, together with changes in the staining properties of the cells, especially of the Purkinje cells in the cerebellum. For a time this led to the suspicion that "shell shock" was a definite morbid entity. But the observation of cases with identical symptoms in persons who had not been subjected to the effects of high explosives or of trauma, together with the results obtained from clinical studies and from psychotherapy, gradually dispelled this view and led to the general acceptance of the emotional origin of the war neuroses. Oppenheim, however, still maintained his position, and evidence has gradually accumulated that certain post-traumatic syndrones, especially vasomotor and trophic disturbances, are persistent and quite intractable to psychotherapy.

Experimental and histologic studies have hitherto failed to discover any structural changes such as those hypothecated by Oppenheim. Schmaus, it is true, produced experimentally areas of progressive degeneration of the myelin sheaths in the spinal cords of animals by severe blows that produced no gross lesions. Such areas of "softening," however, could hardly occur in man without objective clinical signs that would at

once exclude the case from the category of neuroses. Recently, Invar* has succeeded in producing minute physical alterations in nerve cells that, as he suggests, may have a direct bearing on this problem. By highspeed, prolonged centrifugation of the brains of animals immediately after removal from the body or while still within the recently decapitated head, the nucleolus is thrown to the distal end of the nucleus, the chromatophil substances are displaced distad, and the neurofibrils are loosened from the cell membrane and may collect in a mass in the center of the cell.

Ingvar suggests that the effects of centrifugal force resemble those of a blow applied suddenly when the head is free to move. The varying density of the different cell constituents results in variations in their relative displacement and thus causes severe damage to the cell. Apart from the great interest of these observations for studies of the living cell structure, a type of physical alteration is presented such as has been sought to explain the symptoms of commotion. In interpreting the observations for this purpose, however, it must be remembered that the centrifugal force used was steady, intense and prolonged. It may be questioned whether the sudden and momentary displacement from a blow to the head is comparable. Even should the comparability be granted, this will in no wise alter the interpretation that must continue to be placed on the vast majority of traumatic neuroses. It seems logical to conclude that none but the most severe head displacements could cause such physical distortions and that the clinical symptoms produced would ensue immediately on the receipt of the injury. The problem is of great social and medicolegal interest, and the greatest caution must be observed before accepting conclusions that would materially affect both prognosis and treatment.—*Jour. A. M. A.*

*Ingvar, Sven: Centrifugation of the Nervous System—A Method for Neurocytologic Study, Arch. Neurol. & Psychiat, *10*:267 (Sept.) 1923.

## THE STATUS OF BLOOD TRANSFUSION

Novel procedures in medical practice find application so promptly in these days that the scientific progress that they represent is all too often soon forgotten. There is another aspect to the employment of new methods and new drugs that cannot always be so easily dismissed. Few innovations have been so thoroughly studied or so satisfactorily standardized and controlled at the time of their introduction into practical medicine as to render them perfect or even fool-proof in the hands of the uncritical practitioner. Consequently, the newest acquisitions to the healing art may sometimes become potential menaces until their limitations have been made clear. The use of the roentgen rays in the period following their discovery was attended by many serious accidents. New chemical compounds that give great promise of unusual potencies are sometimes found to have limitations in their usefulness represented by unexpected idiosyncrasy in patients, or occasional "side reactions" that limit their usefulness. It is largely for this reason that the "ideal" antiseptic, laxative, anesthetic or analgesic remains to be discovered. Only a survey over a longer experience enables the clinician to balance advantages against disadvantages and thus learn the method of choice in a given emergency.

Something of this sort is now encountered in the consideration of blood transfusion, a procedure that belongs to the newer triumphs of medicine. Nothing seems to surpass the efficacy of blood in replacing loss of the circulating medium of the body. A physiologist established a standard hemorrhage in dogs by bleeding the animals systematically until the blood pressure was 28 mm.: a state in which the dog was about as likely to live as it was to die. He then administered sodium citrate solution, and the dogs died in every instance. He gave saline solution intravenously, but, after a temporary improvement, the mortality was increased, and, after injection of acacia solution, much the same result was observed. When compatable whole blood was given, all animals recovered. Clinical experience with man practically substitutes this experimental finding.

Transfusion in man no longer is primarily a problem of blood vessel surgery, as it was fifteen years ago. The indirect method of transferring blood from one person to another has come into deserved vogue. A surgeon has remarked that the practice of entering the vessels with needles instead of using the scalpel has removed much of the danger of infection and injury to both the donor and the recipient. When blood vessel surgery was resorted to, the number of times an individual could give or receive blood was limited. Aside from the difficulties of instrumental technic, two outstanding factors have interfered with

universal success: first, the tendency of the blood to clot rapidly, and second, the hemolysis produced because of the incompatibility of bloods. The latter difficulty must be met at present by special care in the choice of the donor of the blood. The serologic aspects of transfusion have been studied assiduously in recent years after the discovery of the unlike agglutinating reactions of the bloods of different persons. Blood incompatibilities between donor and recipient can now be largely avoided. The "typing" of serums has become well standardized so that professional or semiprofessional donors can be satisfactorily "listed" for prompt use. An hour's preparation or less may then suffice for an emergency transfusion.

The problem of clotting has not been so satisfactorily solved. The citrate method has, it is true, had large success, and has until recently been the precedure of choice. Unfortunately, the coagulation of blood cannot be retarded by chemical agents without alteration of some of its biochemical and biologic properties. For example, sodium citrate leads to destruction of the blood platelets, which apparently play an important part in the coagulation of the blood. The hemostatic properties of the circulation thus become impaired. The added chemical also develops anticomplementary properties in the plasma, and reduces the phagocytic and opsonic powers of the blood. These facts would naturally argue against the use of the citrate method in the general infection when a resistance action is sought. The corpuscles are said to become more friable—a result particularly undesirable in combating certain types of anemia. There are other occasional systemic "reactions," varying from slight malaise to severe chills and febrile symptoms, that may give the operator considerable concern.

Much effort is being expended to learn how to avert or combat such untoward phenomena. This has led to improvement in the transfusion of whole blood without the use of an added anticoagulant. The procedure has recently been enthusiastically lauded by Brines,[1] as the result of his experience. The reactions following the use of unmodified blood are said to be fewer and milder than those following the citrate method. Brines remarks that while the latter should not be abandoned, the whole blood method should, whenever possible, be substituted for it; however, there is never a time when citrated blood is as good as whole blood.

The indications for transfusion have become so varied and numerous, and its usefulness so gratifying that it seems worth while to remind our readers of how much this helpful precedure really may mean to a patient. As Brines has succinctly stated the effects:

"Transfusion corrects disturbed circulatory balance; provides increased oxygen transportation to the tissues; increases, to a greater extent than do lactates, calcium, salts or any other substances, the coagulability of the blood, and tides the patient over a critical period, until his blood-forming centers can take up their burden or he acquires the proper resistance. It combats infection by increasing the general resistance and by the bactericidal action of the whole blood. It restores the bulk of the blood, but more especially the red corpuscles; and it is important to note that young erythrocytes are better oxygen carriers than old ones."—*Jour. A. M. A.*

1. Brines, O. A.: The Transfusion of Unmodified Blood, Arch. Surg. 7:306 (Sept.) 1923.

## THE MENACE OF "MOONSHINE" WHISKY.

In the days before the passage of the Volstead Act, the query, "What is whisky?" rarely awakened serious reflections. According to the current definition, the term whisky is applied to distilled spirit made from grain, colored and flavored by storage in charred barrels or by addition of caramel and suitable flavor. It usually contains from 40 to 50 per cent of alcohol. The untoward results of overindulgence in a beverage of this description have usually been ascribed to its alcoholic content, although now and then ill defined "by-products" of fermentation present in the distillate have been charged with a toxicity out of all proportion to the quantities ordinarily present. In protesting the innocence of alcohol, the defenders were wont to point to the indefinite "fusel oil" or to furfurol as the pernicious ingredient—usually without convincing evidence. In properly made and suitably aged whiskies, such constituents could at most play only a minor part in the intoxications produced. All of the carefully considered incriminations pointed to alcohol itself as the harmful or intoxicating agent.

The present illicit liquor traffic is a menace to health, and worthy of consideration. While alcoholism is today less prevalent than it was a

few years ago, its attendant and after effects on its victims are more serious. The impression is broadcast that this result is due to the "moonshine" liquor which has found a distribution that was practically impossible so long as a legitimately made product was readily procurable. There can be no question about the danger of methyl alcohol, or methanol, which has taken a large toll of disasters in the form of deaths or blindness in recent years, usually through sheer ignorance rather than malicious or murderous intent on the part of the dispenser. The ever present menace through the machinations of the unscrupulous will be appreciated when it is realized that many of the denatured alcohols contain a varying percentage of methyl alcohol ranging from 2 to 10. Attempts to "rectify" these by redistillation for beverage purposes are not likely to remove the danger in the illicit distillate.

It is not against such obvious contaminations that the impeachment of "moonshine" whisky is directed. Analyses made by the investigators on the numerous samples secured in connection with raids on "moonshine" sugar, grain or fruit distilleries have usually shown a high content of acetaldehyd. The "ranker" the liquor, the higher the aldehyd content. The reason for this has been set forth by government chemists,* who have pointed out that the impossibility of fermentation control by the moonshiner results in a considerable oxidation of the ethyl alcohol into acetaldehyd and even acetic acid. Whereas, in an earlier chemical study of whiskies in this country by Crampton and Tolman,† the average aldehyd content for legitimately made new products was 3.9 parts per hundred thousand, the modern "moonshine" may contain as much as 100 parts. The content of fusel oil is not essentially different in the whiskies of varied origins.

However, there is considerable agreement on the opinion that the peculiarly harmful effects of new whisky are not due to its fusel oil or its higher content of alcohol. The aldehyd, on the other hand, has long been an object of criticism. As whisky ages there is presumably a polymerization of aldehyds which decreases the toxicity. But "moonshine" cannot wait long to reach its prey. Without care to eliminate the first running of the distillation, with its abundance of acetaldehyd, and the last run or tails, richer in fusel oil, efforts at refinement by fractionation and redistillation are minimized. Little wonder, then, if Doran and Beyer present a serious indictment against the simple pot still and the eagerness for more profits in not discarding heads and tails. These chemists remind us that a large element of the present drinking public, alarmed by the recorded and published effects of drinking methanol mixtures, is disposed to resort to the liquor of seemingly known and recent origin under the impression that, being locally or homemade, it is at least safe and pure. The results of many thousands of analyses of this character of liquors show that this may be a fallacy. The evident stupefying or knockout effects of this liquor, in addition to the ethyl alcohol effect, point to the same conclusion.—*Jour. A. M. A.*

*Doran, J. M., and Beyer, G. F.: Character of Moonshine Liquor, Am. J. Pub. Health, 13:831 (Oct.) 1923.
†Crampton and Tolman: J. Am. Chem. Soc. 30:98, 1908.

## REVIEWS FROM CURRENT LITERATURE.

**MALIGNANT LYMPHOMA (Hodgkins Disease). Whitaker, Lester R.: Archives of Internal Medicines, October 15, 1923.**

This investigation is based on a study of the radiographic findings in the chests of forty cases examined at the Massachusetts General Hospital upon seven of which autopsies were made. It is pointed out that Hodgkins disease is often confused with other conditions, especially tuberculosis, and for this reason the patient is not given the benefit of roentgen ray therapy. A review of the literature brings out the fact that pathologists do not agree as to the differentiation between Hodgkins disease and lymphosarcoma, some holding that they are different pathological entities, while others believe that lymphosarcoma is only a rapidly progressive type of Hodgkins. The term malignant lymphoma has been adopted by many pathologists and appears to cover both conditions; certainly the two cannot be differentiated radiographically. The radiographic evidence depends upon the presence of masses of enlarged lymphatic glands. These lobulated masses can be differentiated in a large percentage of cases from other mediastinal growths.

Wessler and Green, in a radiographic study of twenty-five cases, divide the findings into four groups:

First. Mediastinal tumors, which show masses extending from the mediastinum into the lung, with clean-cut lobulated borders.

Second. The infiltrating type, the outline of which is irregular and the border is less definite,

the infiltration extending along the bronchial tree.

Third. Isolated nodules in the lung; a very rare type, and not seen in the forty cases reviewed by the author.

Fourth. Discreet nodes at the lungroot; the condition must be differentiated from aneurysm, metastatic sarcola and carcinoma, primary carcinoma, enlarged hilar shadow, due to chronic inflammation, and tuberculosis.

One of the most useful methods of diagnosis is the roentgen ray therapeutic test, a rapid reduction will occur in one or two treatments in malignant lymphoma.

The author's conclusion in part is as follows:

The roentgen ray is a feasible measure to use as an aid in the diagnosis of Hodgkins disease when the inthoracic nodes are involved and the radiographic appearance is fairly characteristic.

Too, in rare cases, the therapeutic test may be used when biopsy is not possible.

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## DYNAMIC ILEUS AND ITS CAUSATIVE FACTORS.

**Moore, F. D., Surgery, Gynecology, and Obstetrics. Volume XXXVII, No. 3. 1923.**

There is considerable confusion in the terminology of acute ileus, aside from the strictly mechanical forms of obstruction. The best acceptance, however, is that of dynamic ileus as including all those forms of acute intestinal obstruction which are non-mechanical and which are due to some abnormality, either excessive or deficient, in the contractile power of the intestinal musculature. This abnormality may result in either the spastic or the flaccid type of paralysis.

There are many causes given to account for the occurrence of acute dynamic ileus, including the widest possible range of pathological condition. All of these, however, are in themselves only predisposing causes, and all must, of necessity, have back of them some really fundamental factor as the basic etiology.

The most widely accepted, and at present, the most correct theory advanced as to the nature of this fundamental factor, is a disturbance in the innervation of the bowel wall, whether this disturbance takes place in the plexuses in the intestinal wall, those of Meissner and Auerbach, in its sympathetic ganglia, or in the cord itself, is not essential, and undoubtedly varies with the particular causative factor in each case.

The direct cause of death is generally conceded, in dynamic ileus, as well as in mechanical obstruction, to be absorption into the body of the toxic products of disintegrated proteins formed within the obstructed loop of bowel, together with dehydration of the body tissues.

The treatment consists, first, in combatting the toxicity and dehydration, and, secondly, in relieving the obstruction by drainage of the obstructed bowel and removal of its toxic contents.

J. S. MC.

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## ACUTE PERFORATION OF DUODENAL ULCER.

**Shawan, H. K., and Vale, C. F.: Annals of Surgery, Vol. LXXVIII, No. 3. 1923.**

Perforation of the duodenum, whether simple or as a sequence to chronic ulcer, is a condition uniformly susceptible to cure by immediately instituted surgical means.

Two types of duodenum, whether simple or as a sequence to the chronic variety, and the small, soft recent type. A positive history of previous ulcer will aid in diagnosticating the former, while the findings of acute rupture are usually, not always, the inaugurating symptoms in the latter.

The early symptoms of rupture are fairly uniform and are the typical findings in upper intra-abdominal hollow viscus perforation. However, pain, rigidity, and restlessness may occasionally be more intermittent factors than are hard ulcers. History alone may indicate the perforating organ or may be of doubtful value. A differential diagnosis is not of practical value, for the treatment is the same.

Immediate closure of the perforation is the prime essential in surgical treatment. The desirability of additional procedures depends on the local findings and on the general condition of the patient at the time. Excision of the ulcer, modified pyloroplasty, gastro-enterostomy and their combination—each has its indication. More extensive surgery is rarely advisable. Our results having been equally satisfactory with the various methods used, we state no preference, preferring to individualize.

Careful attention to diet is of great importance early as well as long after the operation.

Preeminently, the immediate results depend less on the type of surgical therapy employed than on the time interval allowed to elapse between the perforation of the ulcer and its proper surgical treatment.

J. S. MC.

## WELL BORN.

The U. S. Children's Bureau has just produced a two-reel film "Well Born," which it is believed will meet the need, felt by all interested in the health of mothers and babies, for a simple and convincing presentation of the question of prenatal care.

The picture tells its story in a way which will interest and attract the average mother, whether she lives in a city apartment or on a farm. There is neither preaching nor scolding. The observer sees the experiences of two young couples, Sue and George, Mary and Dick, in learning first, the need for special precautions on the part of the mother during the period before the baby is born and second, just what those special precautions are. Each prospective mother happily puts into practice the things she learns through the maternity clinic, the family doctor, the county nurse.

Shown in its preliminary form at a conference of directors of State divisions of child hygiene or child health at Washington, the picture was received with general approval. Such criticisms as were made were embodied in the revision and editing which took place before the film was finally released with the Bureau's approval.

The picture takes a little less than half an hour in showing. The acting is intelligent and sympathetic and the photography is unusually good.

"Well Born" will be lent by the Children's Bureau to responesible persons and agencies with the understanding that the borrower defrays express charges back and forth, employs a competent motion-picture operator, and guarantees its safe keeping. Those who desire to purchase the film may also apply to the Bureau for information and prices.

The synopsis of the picture follows:

The scene opens in the yard of a comfortable country home. Sue Biddle wearily lifts a pail of water from the well and prepares to carry it into the house. For the second time, Sue is an expectant mother. Although her first baby died because she had not known how to care for herself during the prenatal period, she is now no better informed on the principles of prenatal hygiene.

Sue's only confidente is her sister-in-law, Mary Bedford, herself a young married woman and living in a distant city. To Mary Sue writes of her conditions. In discussing Sue's need of help and guidance with her husband, Dick, Mary reveals the fact that she also is a prospective mother.

Although Mary is disposed to laugh at his anxiety, Dick realizes the importance of placing his wife under the care of a physician at once. A copy of the Children's Bureau leaflet "Minimum Standards of Prenatal Care" convinces her and she consents to visit the city's maternity center. Here she is given a thorough physical examination. Heart, lungs, and blood pressure are tested; throat and teeth are inspected; pelvic measurements taken; and a test is made to determine whether or not the kidneys are properly performing their important work of elimination. A suitable diet is outlined and Mrs. Bedford is told that fresh air and exercise, rest and sleep all in their proper proportions will help to build her baby's health and to conserve her own. As a final injunction, the doctor at the maternity center urges upon the Bedfords the importance of at least monthly consultations with their own physician.

While practicing the advice she has received, Mary Bedford passes it on through letters to Sue in her country home. Sue is sadly in need of help and encouragement. Neighbors frighten her with "old wives' tales" and her husband fails to appreciate the necessity for unusual precautions at this time. "My mother had eight children and never even had a doctor," says he. "What is the matter with women nowadays?"

Urged by Mary, however, Sue insists on visiting the village doctor and dentist. The gift of a maternity dress from Mary helps to make her comfortable and attractive and a tactful letter from Dick arouses George to the duties of prospective fathers. Bulletins from her State Board of Health, the advice of her doctor, and the county nurse whom he sends to assist her all help to set Sue's feet firmly on the road to healthy, happy motherhood.

Here the scene shifts to a hospital room in the distant city where the Bedfords live. Mary in bed and Dick bending over await the nurse who finally enters with the baby for whose welfare they have given such constant thought and care.

Six months later and we see a reunion in the country. The dramatis personæ is increased from four to six. Mary and Sue are seated on the grass, their babies in their arms. The picture radiates happiness and well-being. George Biddle

tries vainly to pose the babies while Dick stands near, camera in hand. Having won their first right—to be Well Born—these lusty youngsters begin promptly, like the rest of us, to clamor for other things.

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## SHEPPARD-TOWNER ACT.

Forty States are now cooperating with the Federal government, under the terms of the Sheppard-Towner maternity and infancy act, to reduce the death rate among mothers and babies throughout the United States.

The first official report of activities under this Act, through which Congress is permitted to appropriate $1,240,000 annually for the welfare of maternity and infancy, is made public today as a part of the annual report of Grace Abbott, Chief of the Children's Bureau of the Department of Labor. Miss Abbott is also chairman of the Federal Board of Maternity and Infant Hygiene. The National administration of the maternity and infancy act is lodged in the Children's Bureau.

The only States which have not accepted the provisions of the Maternity and Infancy Act are: Vermont, Massachusetts, Rhode Island, Maine, where the Legislature passed an acceptance act which was vetoed by the governor; Louisiana and Illinois, where the Act received a substantial majority in the Senate but failed of passage in the House; Kansas, where the Act passed the Senate unanimously, but did not come to a vote in the House; and Connecticut, where the 1923 Legislature instructed the Health Department not to accept the funds available under the Act.

Extension of the Act to benefit the mothers and babies of Alaska, Hawaii, Porto Rico and the Philippines is recommended by Miss Abbott's report.

Appalling infant death rate in the island possessions of the United States "make indifference on the part of the United States impossible," Miss Abbott states. Reports of the governors of Porto Rico and Hawaii show that in Porto Rico 153 babies, and in Hawaii 120 babies, die during the first year of life, out of every 1,000 born alive. In the Philippine Islands the last census showed the rate to be 358. In contrast to these high rates is the rate of 76 for the birth registration area of the United States.

The United States has "a national obligation to render (these communities) at least the same assistance being given the States," Miss Abbott points out.

Important investigations in child hygiene, child labor, and the care of dependent and delinquent children have been made by the Children's Bureau during the last year. The results of some of these investigations are summarized in Miss Abbott's report.

During the year the Children's Bureau cooperated with the Community Health Service of Boston in the demonstration of a habit-clinic for pre-school children. Doctor D. A. Thom of the Boston Psychopathic Hospital has been in charge of the clinic, and has prepared an analysis of the results of the experiment, which will be published by the Children's Bureau.

A survey of nutrition work being done for children of pre-school age in nine eastern and mid-western cities, and three rural communities has been made. The report of this study is being prepared.

An intensive study of the growth of young children, with special reference to rickets, to the influence of the children's diets, of the diets of nursing mothers, and of housing and sunlight, has been made in the District of Columbia, with the cooperation of the Child Welfare Society of the District. With the object of discovering methods of preventing rickets, a study in New Haven in cooperation with the medical school of Yale University is under consideration.

Investigations of rural child labor and its relations to school attendance have been made by the industrial division of the Bureau in Colorado, Connecticut, Illinois, Kentucky, Maryland, Massachusetts, Michigan, New Jersey, North Dakota, South Carolina, Texas and Virginia. These surveys have given detailed information about 11,000 rural child laborers under 16 years of age. Surveys have also been made of children in street trades in Wilkes-Barre, Pennsylvania; Columbus, Ohio; Atlanta, Georgia; and Omaha, Nebraska. Child labor inspection were also made in a number of textile mills in Georgia. These inspections show a large number of violations of the standards of employment of children laid down in the two Federal laws declared unconstitutional, and also a number of violations of the State child labor laws, in spite of the fact that State standards were considerably lower than the Federal standards.

The work of the social service division of the Bureau included investigation of mothers' pension laws, of foster-home care for dependent children, and a study of juvenile courts in ten cities.

Thirty-four new publications, charts, and leaflets were issued by the Bureau during the fiscal year 1922-23. Twenty-five publications are now in press, and 24 in preparation; 821,735 Bureau publications were distributed, an increase of 195,985 over the number distributed in the previous year, but 400,000 less than the number distributed in 1919, when the Bureau's printing fund was much larger than it has been since that time; 98,533 letters were received by the Children's Bureau during the year. These letters were mostly from parents and other individuals who wished information from the Children's Bureau about some phase of child care.

## NEW AND NONOFFICIAL REMEDIES.

BUTESIN (n-butyl-para-aminobenzoate). Butesin is the normal butyl ester of 4-aminobenzoic acid. The actions and uses of butesin are similar to those of benzocaine (anesthesia), which is the ethyl ester of 4-aminobenzoic acid (see New and Nonofficial Remedies, 1923, p. 41, Anesthetics, Local, Difficultly Soluble). Butesin is used as a dusting powder, either pure or diluted. It may be used in the form of troches, ointment, suppositories or dissolved in a fatty oil. Butesin is a white, crystalline powder, odorless, tasteless, almost insoluble in water, but soluble in alcohol, chloroform, ether and in fatty oils. The Abbott Laboratories, Chicago. (Jour. A. M. A., Nov. 3. 1923, p. 1523.)

DIPHTHERIA ANTITOXIN GLOBULIN.—This product (see New and Nonofficial Remedies, 1923, p. 283) is also marketed in syringes containing 20,000 units. Cutter Laboratory, Berkeley, Calif.

GLYCERINATED VACCINE VIRUS.—This product (see New and Nonofficial Remedies, 1923, p. 293) is also marketed in packages containing one capillary tube. Cutter Laboratory, Berkeley, Calif.

GONOCOCCIC VACCINE.—A gonococcic vaccine (see New and Nonofficial Remedies, 1923, p. 304) marketed in vials of 5 c.c., each cubic centimeter containing 500 million cocci. Cutter Laboratory, Berkeley, Calif. (Jour. A. M. A., Nov. 17, 1923, p. 1693.)

AFENIL (Calcium chloride urea).—A molecular compound of calcium chloride and urea. Afenil has the actions of calcium chloride. It is claimed that when afenil solutions are administered intramuscularly or intravenously, the drug is better tolerated and less irritating than calcium chloride. It is claimed that the intravenous administration of afenil is indicated in hay fever, asthma and other diseases of the respiratory tract in anaphalactic conditions, skin rashes, urticarias and as a means of preventing severe arsphenamine reactions. Afenil is marketed in ampules containing 10 c.c. of a 10 per cent solution of afenil. E. Bilhuber, Inc., New York.

SILVER NITRATE SOLUTION (in capsules—P. D. and Co.).—An aqueous solution of silver nitrate contained in capsules composed of beeswax with an inner lining of a hard paraffin. The solution is intended for the prophylaxis of ophthalmia neonatorium in the newborn. The solution is marketed in two forms: capsules containing 6 minims of a 1 per cent solution, capsules containing 6 minims of a 2 per cent solution. Parke, Davis and Co., Detroit. (Jour. A. M. A., Nov. 24, 1923, p. 1789.)

## PUBLISHER'S NOTES.

### EFFICIENCY OF ARSPHENAMINES

A reliable basis for comparing the efficiency of therapeutic agents is the chemotherapeutic index, that is, the relation of the maximum tolerated dose to the minimum curative dose.

Judged by this standard, the chemotherapeutic index of D. R. L. Neoarsphenamine, which generally passes a toxicity test of 350 mgs. per kilo of body weight, or higher, (from 75 to 100% better than Government requirements) is about 58.3.

A leading syphilographer recently wrote:

"We are using D. R. L. Neoarsphenamine with great satisfaction in my clinic and at the hospital, and very rarely have any reactions that amount to anything. The therapeutic results have been extremely satisfactory. In my private practice, our results have been so good that I personally could not be persuaded to use any other product. We rarely have any patient complain of reactions, and the curative properties of the drug have been such that in secondary syphilis the first course of ten or twelve injections is invariably followed by a negative Wassermann test."

### ANTITOXIN PROGRESS

Ever since Behring and Roux gave diphtheria antitoxin to a waiting world, the most progressive biological laboratories have been engaged in reducing to a minimum the inconveniences and uncertainties of antitoxin administration.

The doses given at first were too small, and yet quite large enough in volume. The manufacturers soon succeeded, however, in eliminating useless water from the serum and otherwise concentrating it. Meantime more accurate methods of assaying it were developed, the U. S. Public Health Service co-operating.

The packages, too, have been improved. The profession has for many years insisted on a syringe package, and in such a package, with the serum in contact with the rubber of the piston, adhesion between rubber and glass has been a source of great difficulty in handling.

One by one all the practical problems encountered have been solved, and now we have an antitoxin so concentrated that it carries when fresh 40% more of the antitoxic principle than the label calls for, and yet does not make an unmanageable dose, even when a single injection of 20,000 units is to be given. Moreover, in the process of concentration excessive viscosity has been avoided, for that would interfere with rapid absorption. And the syringe packages now being offered have won the praise of the profession.

Our readers should take the time to follow what Parke, Davis & Co. have to say about "Improvement of Antitoxin" elsewhere in this issue.

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